Pioneer

Operating Instructions
– Advanced MCACC PC Display Application Software –

MCACC advanced

AUDIO/VIDEO MULTI-CHANNEL AMPLIFIER

SC-LX90

About this manual

These are the Operating Instructions for an application which displays on your computer screen the listening room reverberation frequency characteristics, the speakers' group delay characteristics and the MCACC parameters measured by the Advanced MCACC function of your SC-LX90.
It explains everything you need to know to use the application, from installation to troubleshooting. You will need to operate the amplifier to use this application, so please refer also to the Operating Instructions supplied with the amplifier.

About the Advanced MCACC Application

The functions of the Advanced MCACC application are used with the same purpose as the "Reverb View" and "Group Delay View" functions of the amplifier itself (see pages 48 and 50 of the Operating Instructions of the SC-LX90), namely to display the reverberation characteristics of the listening environment and the group delay characteristics of the speakers. Using a computer provides cleaner, more easily readable graphs. The application can also be used to display the measurement values stored in the amplifier's MCACC memory.

Requirements for using the application on your PC

- Operating system must be Microsoft® Windows® XP (Service Pack 2) or Windows® 2000.
- CPU must be at least Pentium 3 / 300 MHz or AMD K6 / 300 MHz (or equivalent) with at least 128 MB of memory, and your monitor must be able to display a minimum resolution of 800x600.
- An RS-232C port connector is necessary for graphical output. Refer to the PC's operating instructions and/or the PC manufacturer for more information on making the proper port settings.

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Main features of the application

1. Displays 3D graphs of the reverb frequency characteristics of your room. You can choose to see these measurements both with and without the equalization performed by this amplifier (before and after calibration).
2. Allows you to display 3D graphics of the group delay characteristics of the different speakers. (The values before and after calibration can be displayed.)
3. Allows you to display a list of the Advanced MCACC parameters (the results of measurements).
4. Allows you to view graphs in a number of different formats.
5. Allows you to save the various measured data on the computer.
6. Allows you to make memos about the conditions in your room when you made the measurements, etc.
7. Allows you to print the various graphs and the MCACC measurement values.

Continue

Things you can accomplish with this application

1. Advanced EQ Setup, which you can do with the amplifier (see page 48 in the amplifier's Operating Instructions), allows you to choose the optimum time period for auto EQ setup. You can use this application's reverberation characteristics (Reverb) as a guide in choosing the best time period for your room.
   For details, see *How to Interpret the Graphs* (page 18).
2. Skewed reverb frequency characteristics in your listening room can prevent you from enjoying an accurate sound field. The graphs displayed by this application are a powerful tool because they allow you to check these reverb frequency characteristics at a glance. You can also check the effectiveness of steps that you take to improve the acoustics of your listening room, for example, installing sound absorbent material.
   For details, see *How to Interpret the Graphs* (page 18).
3. The Group Delay graphs allow you to check the group delay characteristics before and after calibration.
   For details, see *Reading the group delay characteristics graph (Group Delay)* (page 25).
4. The MCACC parameter display (MCACC Parameters) allows you to display on the computer all the parameters (measurement values) stored in the amplifier's MCACC memories.
   For details, see *Display of the MCACC parameters* (page 26).

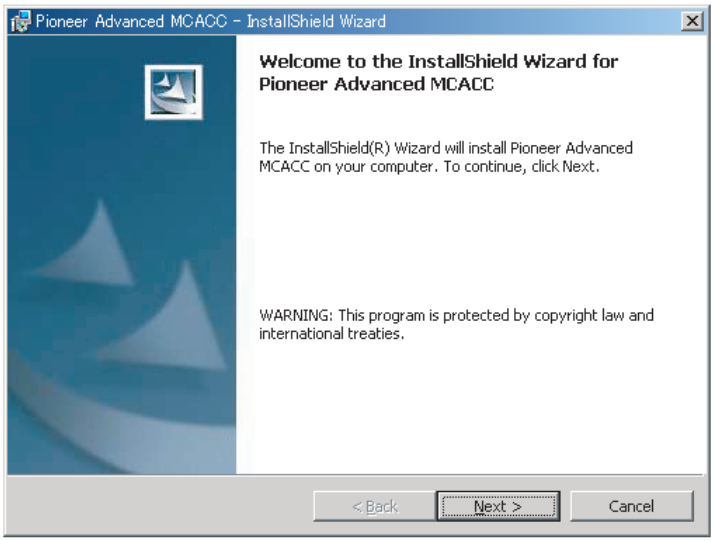
Installing the Application

Install this application on your PC by using the downloaded installer.
You will find the installer in the folder that you specified when you downloaded the application.
If a previous version of the Advanced MCACC application (“Ver. 1.1”, “Ver. 1.4” or “Ver. 2.0”) is installed on your computer, please update the application. For details, see *Updating the application* (page 27).

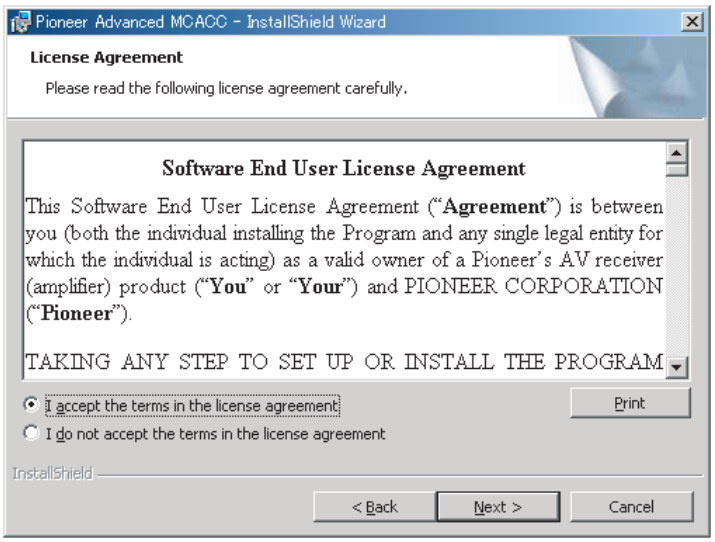
1 Double click the “PioneerAdvancedMCACC_e_ver_*_*.exe” file.

The number after “ver” in the filename is the version number of the installer.
Depending on the current configuration of your PC, the InstallShield Wizard can take some time to appear.

2 Click “Next”.


Pioneer Advanced MCACC - InstallShield Wizard
Welcome to the InstallShield Wizard for Pioneer Advanced MCACC
The InstallShield(R) Wizard will install Pioneer Advanced MCACC on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

3 (If you agree to the contents of the License Agreement), select “I accept the terms in the license agreement”, then select “Next”.


Pioneer Advanced MCACC - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
Software End User License Agreement
This Software End User License Agreement (“Agreement”) is between you (both the individual installing the Program and any single legal entity for which the individual is acting) as a valid owner of a Pioneer’s AV receiver (amplifier) product (“You” or “Your”) and PIONEER CORPORATION (“Pioneer”).
TAKING ANY STEP TO SET UP OR INSTALL THE PROGRAM
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
InstallShield
< Back
Next >
Cancel

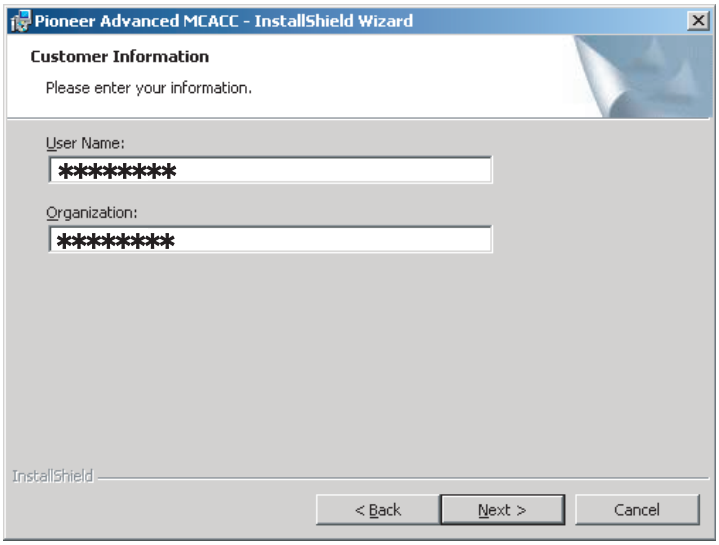
The destination selection screen of the installer appears.

Continue

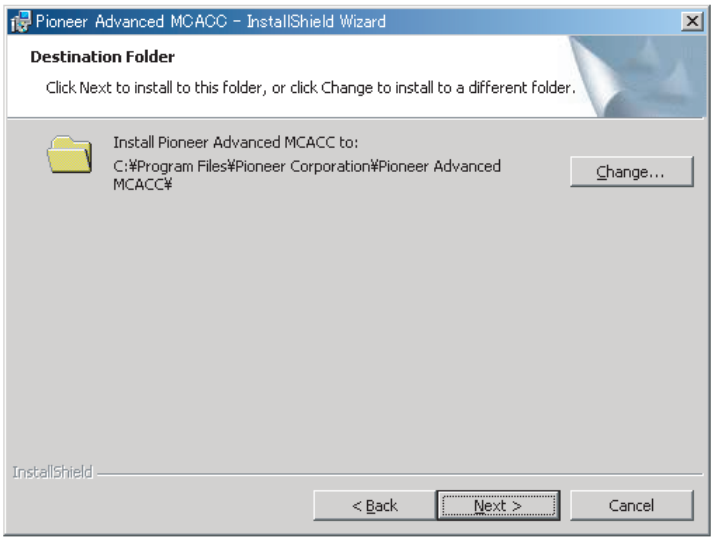
Troubleshooting

If an error occurs when you double click and you are unable to proceed with the installation.

4 Input the Customer Information, then select “Next”.



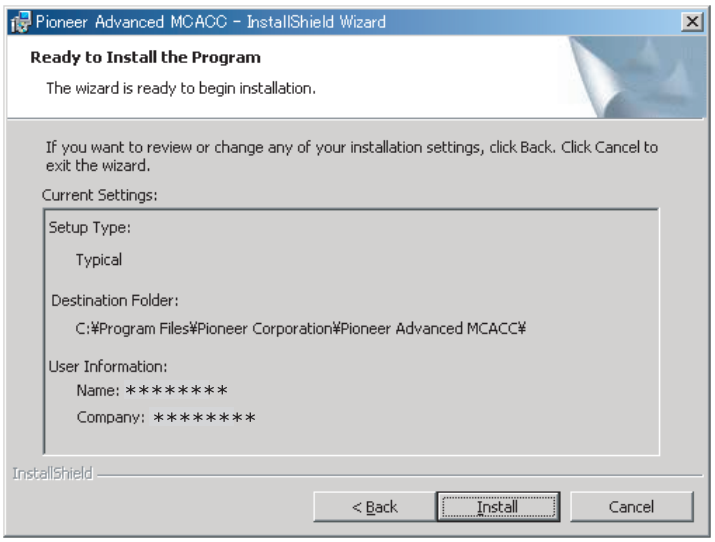
5 Click “Next”.


Pioneer Advanced MCACC - InstallShield Wizard
Destination Folder
Click Next to install to this folder, or click Change to install to a different folder.
Install Pioneer Advanced MCACC to:
C:¥Program Files¥Pioneer Corporation¥Pioneer Advanced MCACC¥
Change...
InstallShield
< Back
Next >
Cancel

The application is installed in the folder indicated at “Destination Folder”. The destination folder can be changed by clicking “Change...”.

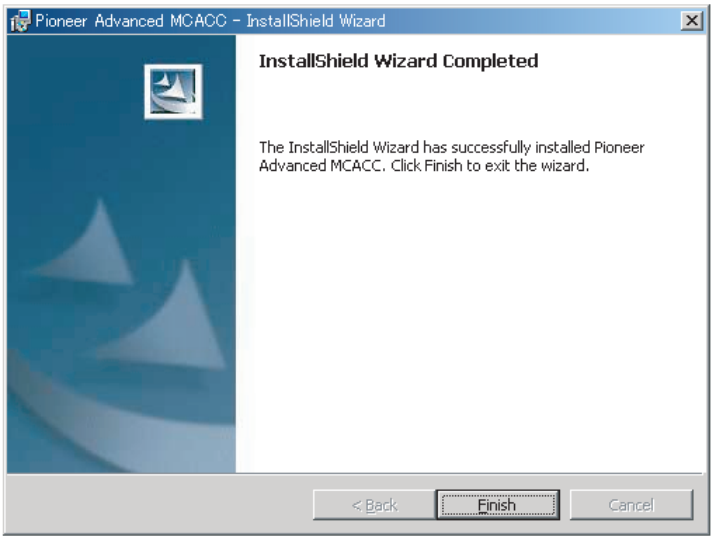
Continue

6 Choose “Install”.



A shortcut icon is created on the desktop.

7 Click “Finish”.


Pioneer Advanced MCACC - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed Pioneer Advanced MCACC. Click Finish to exit the wizard.
< Back
Finish
Cancel

The installation is complete.

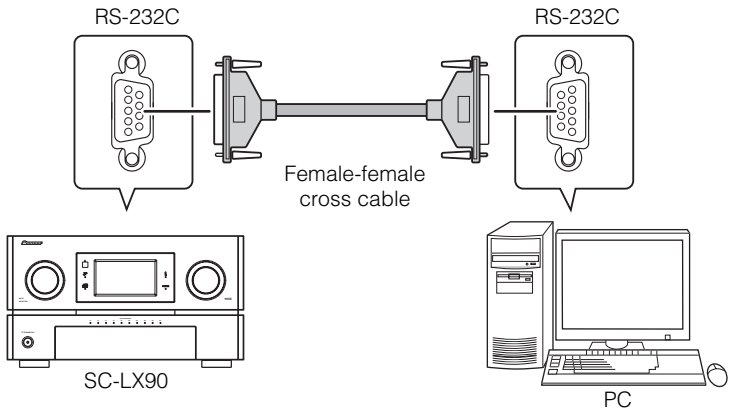
Operations on the Amplifier and Cable Connections

Connect the amplifier and the computer in order to display on the computer the various data measured on the amplifier itself.

1 Connect the amplifier to your PC with a RS-232C cable.

Caution

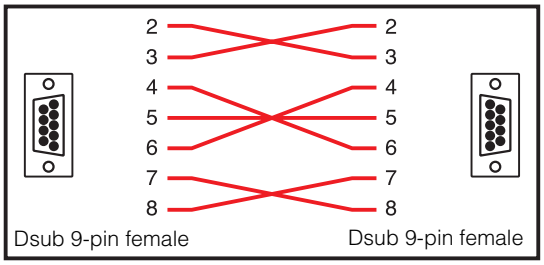
Before making or changing connections, switch off the power and disconnect the power cord from the power outlet. Plugging in components should be the last connection you make with your system.

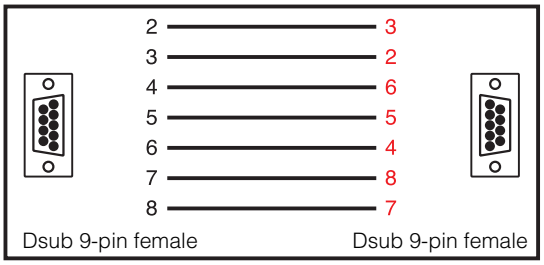


Note

- When using a notebook computer or other computer without an RS-232C terminal, this application can be used by connecting the amplifier via USB using a commercially available USB-RS-232C conversion cable (USB-Serial cable). When using USB connections, be sure to select the proper COM port number for data transmission (see page 9).
- The type of cable to use is a female-female cross cable. Different manufacturers use different names to refer to this type of cable. Sometimes it is called an “interlink” cable, and sometimes it is called a “reverse” cable.

Pin-out diagram of RS-232C cable to connect amplifier and PC





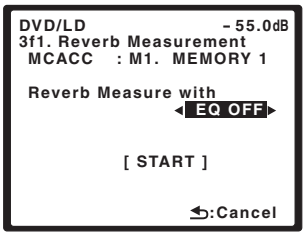
Continue

2 Perform the "Auto MCACC (ALL)" operation on the amplifier. (See page 11 of the amplifier's Operating Instructions.)

The setting here is not required if the "Auto MCACC (ALL)" operation has already been performed before connecting the RS-232C cable. Proceed to step 3.

3 From the amplifier's "Manual MCACC" menu, select "EQ Professional", then select "Reverb Measurement" to measure the room's reverb characteristics. (See page 48 of the amplifier's Operating Instructions.)

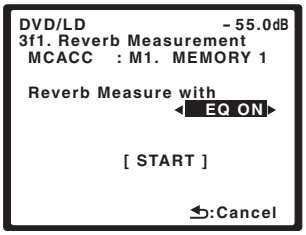
If you want to measure the room's reverb characteristics, select "EQ OFF", then select "START".



If you want to measure the room's reverb characteristics after equalization, first perform the "Auto MCACC (ALL)" operation, then select "EQ ON", then "START". (See page 23.)

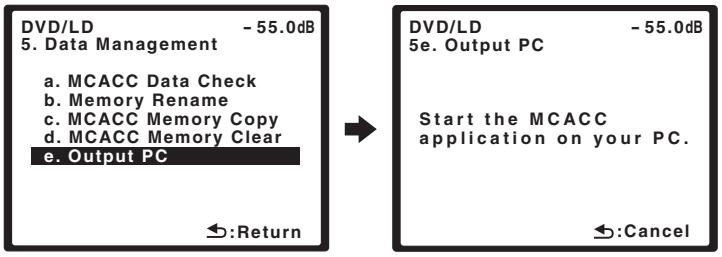
Note

Measure the room's reverb characteristics after equalization with the microphone at the same position as when the "Auto MCACC (ALL)" operation was performed. The measurements are performed with the EQ values stored in the MCACC memory selected on the amplifier, so before measuring the reverb characteristics, select the MCACC memory to be measured after equalization.



4 Select "Output PC" from "Data Management".

The message "Start the MCACC application on your PC" appears and the amplifier enters transmission standby mode. It is ready to send data to your PC.



This completes the preparations for sending the measurement data to your PC.
(To send the data, proceed to the next section Application Operations.)

Applications Operations

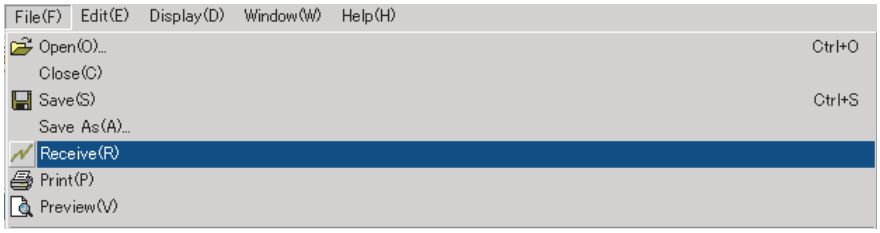
This section explains operations that you do in the application, from receiving measurement data to displaying graphs and saving the data.

Receiving measurement data

1 Double click the application shortcut icon on the PC desktop.

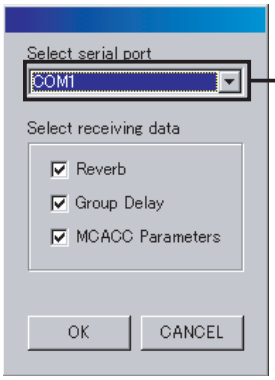
You can also start the application by selecting “Program” → “Pioneer Corporation” → “Advanced MCACC” from the “Start” menu.
The application starts.

2 Select “Receive” under “File” on the menu bar.



3 Select the number of the COM port to which the RS-232C cable is connected.

If you do not know which COM port number to select, try selecting each port in turn, beginning with “COM1”.



COM port selection box

Note

Refer the operating instructions of your PC for more information about COM port settings.

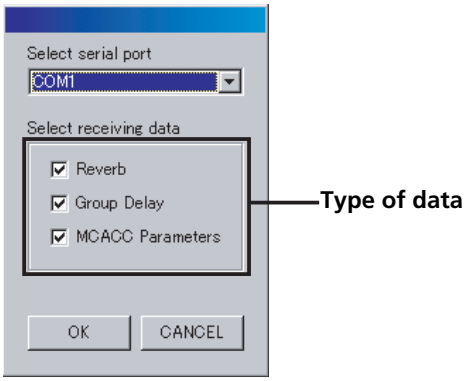
Continue

Troubleshooting

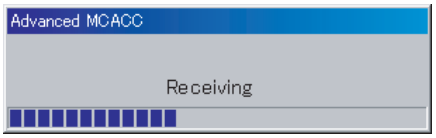
If an error occurs when you select “Receive” and no data is sent.

4 Select the type of data to be received, then select “OK”.

Select “Reverb” to receive the data for the room’s reverb characteristics, “Group Delay” to receive the data for the speakers’ group delay characteristics, “MCACC Parameters” to receive the data for the various MCACC parameters (measurements results).



Data transmission starts.



When reception finishes the received data appear.

Note

- The data used to display the reverberation characteristics graph (Reverb) is deleted when the amplifier is turned off. In this case, no reverberation characteristics graph is displayed even if data is received. If you have turned the power off after taking the measurements, take the measurements over again.
- The data used to display the group delay characteristics graph (Group Delay) and MCACC parameters (MCACC Parameters) is not deleted even when the amplifier’s power is turned off.
- In order to avoid malfunction, after the completion of the data transmission, unplug the RS-232C cable connecting your PC and the amplifier.

Continue

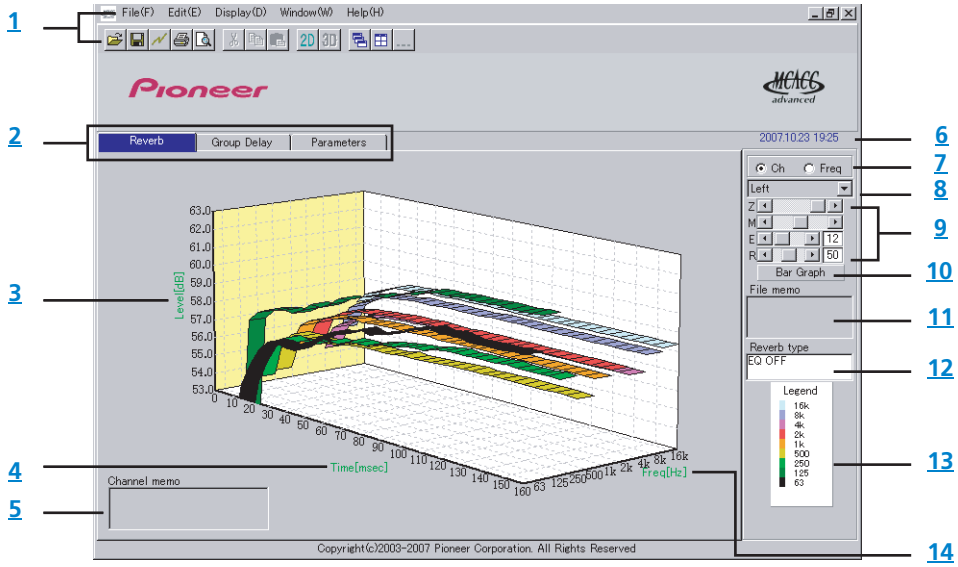
Graph and parameter displays (names and functions of parts)

When measurement data is received, the graphs and parameters display window appears. The display window is divided into three items, “Reverb”, “Group Delay” and “MCACC Parameters”. Select the desired tab to switch to that window and display the respective details.

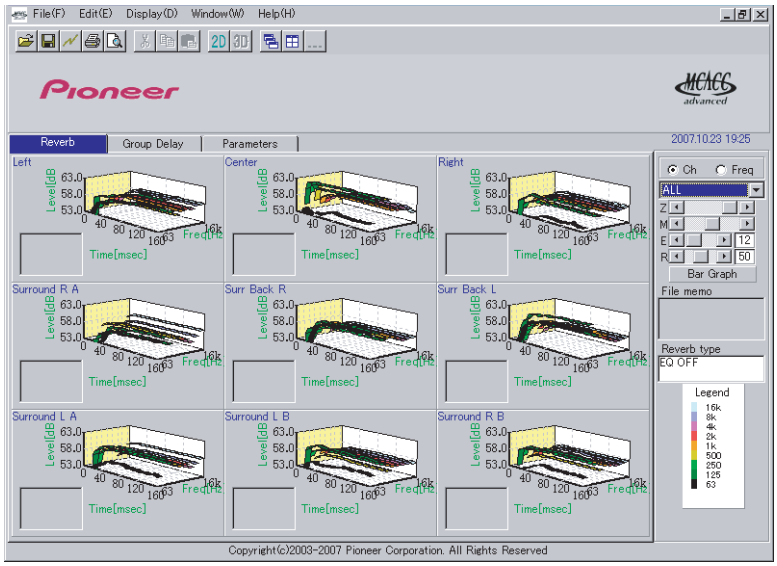
Reverb (graph of the room’s reverberation frequency characteristics)

You can switch the display between individual displays for the different channels/frequencies or a list display of all the channels/frequencies (ALL). Below we explain the different parts of the individual displays and the ALL display, using the channel display as an example.

Individual display (Example: Left channel)



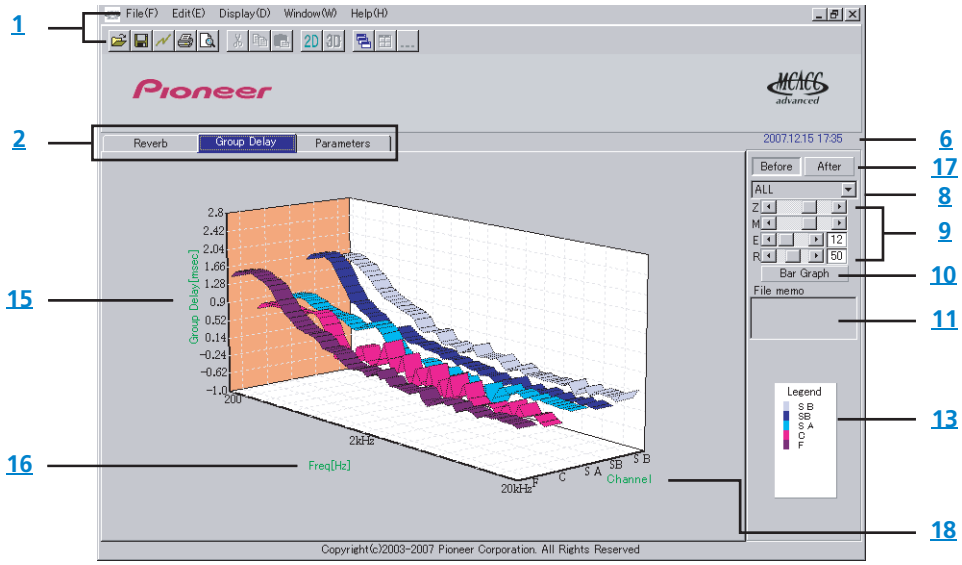
ALL display



Continue

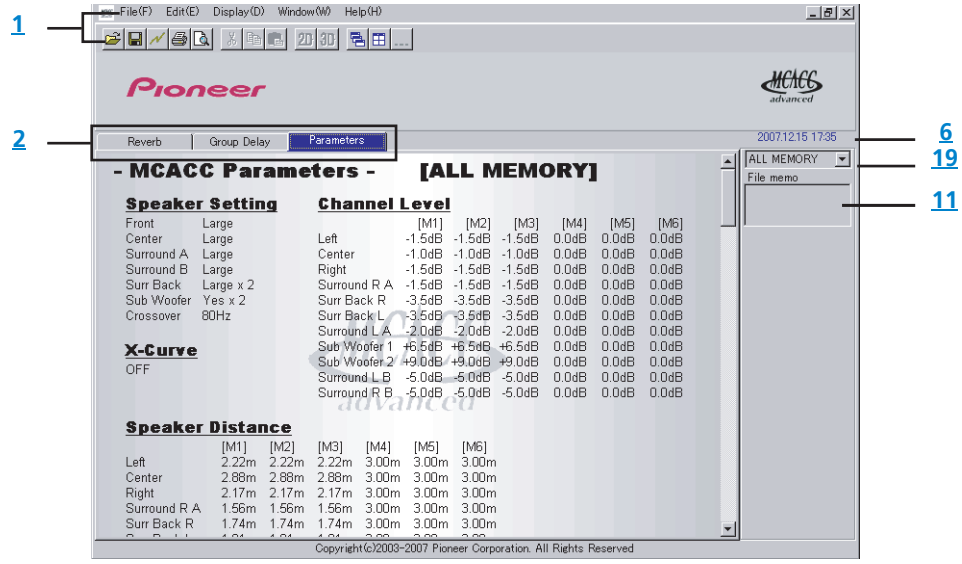
Group Delay (graph of the speaker's group delay characteristics)

You can switch the display between the speaker's group delay characteristics before calibration and the speaker's group delay characteristics after calibration. You can also switch between the group delay characteristics for all channels and the group delay characteristics for individual channels.



MCACC Parameters (list display of MCACC parameters)

A list of the measurements in all the MCACC memories is displayed. It is also possible to display the measurements in the individual MCACC memories.


1
2
6
19
11
File(F) Edit(E) Display(D) Window(W) Help(H)
Pioneer
MCACC advanced
Reverb
Group Delay
Parameters
2007.12.15 17:35
ALL MEMORY
File memo
- MCACC Parameters - [ALL MEMORY]
Speaker Setting
Front Large
Center Large
Surround A Large
Surround B Large
Surr Back Large x 2
Sub Woofer Yes x 2
Crossover 80Hz
X-Curve
OFF
Channel Level
[M1] [M2] [M3] [M4] [M5] [M6]
Left -1.5dB -1.5dB -1.5dB 0.0dB 0.0dB 0.0dB
Center -1.0dB -1.0dB -1.0dB 0.0dB 0.0dB 0.0dB
Right -1.5dB -1.5dB -1.5dB 0.0dB 0.0dB 0.0dB
Surround R A -1.5dB -1.5dB -1.5dB 0.0dB 0.0dB 0.0dB
Surr Back R -3.5dB -3.5dB -3.5dB 0.0dB 0.0dB 0.0dB
Surr Back L -3.5dB -3.5dB -3.5dB 0.0dB 0.0dB 0.0dB
Surround L A -2.0dB -2.0dB -2.0dB 0.0dB 0.0dB 0.0dB
Sub Woofer 1 +6.5dB +6.5dB +6.5dB 0.0dB 0.0dB 0.0dB
Sub Woofer 2 +9.0dB +9.0dB +9.0dB 0.0dB 0.0dB 0.0dB
Surround L B -5.0dB -5.0dB -5.0dB 0.0dB 0.0dB 0.0dB
Surround R B -5.0dB -5.0dB -5.0dB 0.0dB 0.0dB 0.0dB
Speaker Distance
[M1] [M2] [M3] [M4] [M5] [M6]
Left 2.22m 2.22m 2.22m 3.00m 3.00m 3.00m
Center 2.88m 2.88m 2.88m 3.00m 3.00m 3.00m
Right 2.17m 2.17m 2.17m 3.00m 3.00m 3.00m
Surround R A 1.56m 1.56m 1.56m 3.00m 3.00m 3.00m
Surr Back R 1.74m 1.74m 1.74m 3.00m 3.00m 3.00m
Copyright(c)2003-2007 Pioneer Corporation. All Rights Reserved

Continue

1 Menu bar and menu icons

You can choose the following commands from the application menus.

File	
Open	Opens a file that has been saved on the PC (see page 17).
Close	Closes a file.
Save	Save measurement data in a file (see page 16).
Save As	
Receive	Receives measurement data (see page 9).
Print	Prints the current individual graph.[a]
Preview	Displays a preview screen to show how the printed page will appear.[a]
Exit	Exits the application.

a. It is not possible to print or preview items that have not been received (items for which there is no data).

Display	
Graph(G)	The way in which the graphs are displayed can be changed. Graph 2D 2D : Displayed in two dimensions. Graph 3D 3D : Displayed in three dimensions.
Type(T) **(Reverb display only)**	The reverb characteristics graph display type can be changed. Each Ch: All the channels are displayed individually. The graph for the listening environment's reverb characteristics (before calibration) is displayed with the "Each Ch" mode, allowing you to check the reverb characteristics for the individual channels. Pair Ch: Composite reverb characteristics for the left and right pairs of the "Front", "Surround" and "Surr Back" channels are displayed. Use the "Pair Ch" mode to display the graphs for the reverb characteristics after calibration.
Demo	Displays 3D graphs with rotating.[a]

a. To finish, reselect and uncheck the box.

Continue

Window	
Cascade	Cascades files.[a]
Tile (Reverb display only)	Tiles files.[a]
Minimize	Minimizes the window.
Arrange	Arranges minimized icons.[a]

a. Available when two or more files are open.

Help	
Version Info	Displays the version of the application.

2 Display item selection tab
A graph for the selected item or the MCACC parameter list is displayed.

3 Level [dB]
The level axis.

4 Time [msec]
The time axis.

5 Channel memo (only available when the channels are displayed on the reverb characteristics graph)
Allows you to record a short memo about each channel.

6 Date and time
Display the date and time when the measurement data was transferred to the PC.

7 Channel and frequency switch buttons
Ch: Selects channel display mode (frequencies are displayed along graph depth axes).
Freq: Selects frequency display mode (channels are displayed along graph depth axes).

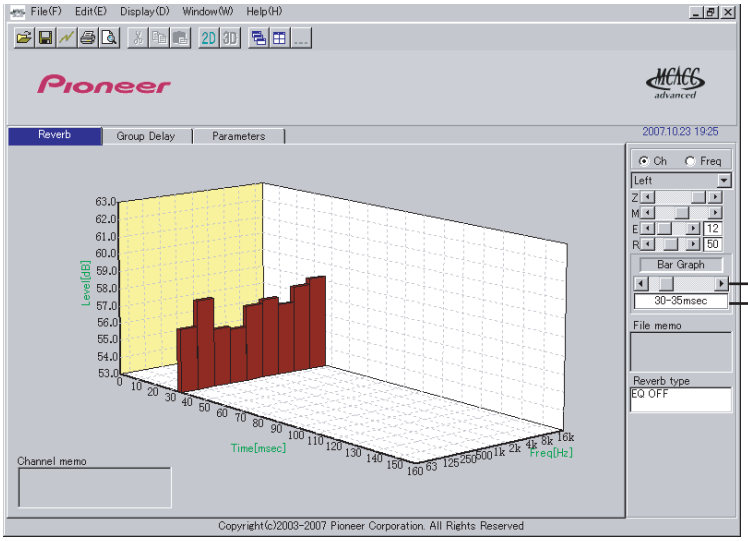
8 All/individual display switch menu
Allows you to select All display or individual display (Left, Front, etc.).

9 Graph adjustment bar
Z: Increases or reduces the display unit for the graph's vertical axis scale (Level [dB] or Group Delay [msec]).
M: Moves the display position of the graph's vertical axis scale (Level [dB] or Group Delay [msec]).
E: Moves the viewpoint of 3D graphs vertically. (Cannot be changed for 2D graphs.)
R: Moves the viewpoint of 3D graphs horizontally. (Cannot be changed for 2D graphs.)

Continue

10 Bar Graph

Changes the type of graph display. The display switches between the band graph and bar graph by pressing this button.



Reverb:
Move the time axis.
Group Delay:
Move the frequency axis.

11 File memo

Memos concerning the file (conditions at the time of measurement, etc.) can be stored for the different items.

12 Reverb type

Indicates whether the reverb characteristics are before calibration (EQ OFF) or after calibration (EQ ON). (For the reverb characteristics after calibration, the EQ calibration curve is displayed.)

13 Legend

Shows which colors in the graphs correspond to which channels or frequencies.
When the speaker's group delay characteristics graph is displayed, the following channels are indicated (maximum): **F**: Front, **C**: Center, **S A**: Surround A, **SB**: Surround back, **S B**: Surround B

14 Freq [Hz]/Channel

In channel display mode, it becomes the frequency axis. In frequency display mode, it becomes the channel axis.

15 Group Delay [msec]

This axis indicates the group delay amount (length of group delay time).

16 Freq [Hz]

This is the frequency axis.

17 Before calibration/after calibration selector buttons

The group delay characteristics before calibration are indicated when "Before" is selected, the characteristics after calibration are indicated when "After" is selected.

18 Channel

This is the channel axis.

19 List display/individual display selector buttons

All the MCACC memories are displayed when "ALL MEMORY" is selected, individual MCACC memories are displayed when set for individual displays ("MEMORY1", etc.).

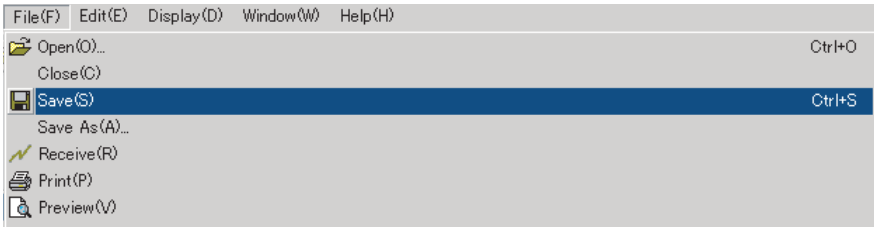
Continue

Saving graphs in data files

You can save measurement data received from the amplifier on your PC. Data received at one time is saved in one file.

1 To save measure data, choose “Save” from the “File” menu.

If you have data that has already been saved and want to save it under a new name, choose “Save As”.



2 Check the save location, assign a file name, then click “Save”.

The data is saved in a CSV format file (the file extension is “.csv”).

When you are finished saving data, you should (using the amplifier controls) press “RETURN” to exit the Reverb Output PC screen. This takes the amplifier out of transmission standby mode. (See page 69 in the amplifier’s Operating Instructions.)

Note

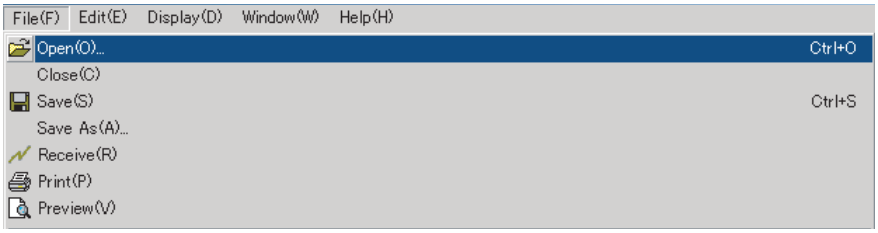
The CSV format file is often used to transfer data to applications such as databases and spreadsheets. You can use these applications to view the numeric values in your measurement data.
However, if you use another application to edit the data and then save the file, the Advanced MCACC application may be unable to open the file.

Continue

Opening data files

You can open and display two or more data files to compare the data in the files.

1 Select “Open” from the “File” menu in the menu bar.



2 Select a file to display and click “Open”.

The previously saved measurement data is displayed.

Exiting the application

1 Select “Exit” from the “File” menu.

The application closes.

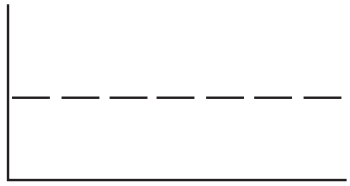
How to Interpret the Graphs

As indicated in *Things you can accomplish with this application* (page 3), the reverb characteristics graph can be used as reference when determining the calibration time position with the amplifier's "Advanced EQ Setup" function. It is also a valuable means for checking the effect of measures taken to improve the acoustics of the room.
The group delay characteristics graph can be used to check the group delay characteristics (before calibration) of the speakers being used and the effect of calibration with the Full Band Phase Control function. For details, refer to *Reading the group delay characteristics graph (Group Delay)* on page 25.

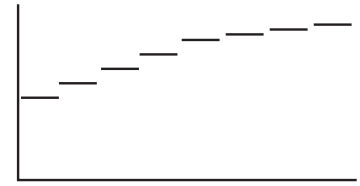
How to interpret reverb graphs (Reverb)

The graphs show changes in microphone input level along a time axis, beginning from a state of quiet at time 0, when test tones begin to be output, and continuing while a constant level of sound is output from the speakers.

- If there is absolutely no reverberation in your room, the graph will look like figure A below.
- If there is reverberation, the graph will show a gradual accumulation of acoustic power, as shown in figure B.



A



B

Note

- Due to an effect known as "group delay", lower frequencies may take longer to be generated than higher frequencies (this is most obvious when comparing the frequencies around 0 ms).
- If a graph extends beyond the display range, or almost fills it, you can change the display by using the Z (Zoom) control on the graph adjustment bar, adjusting the display range of the Level [dB] scale so that the whole graph is visible.
- Since channel level and speaker distance settings are displayed in the graphical output, it is best to make sure these settings (made in the Auto MCACC "ALL" or "Channel Level" setup) are adjusted properly before reverb measurement.
- Even in cases where there is a great difference in the output levels of different frequencies (the frequency characteristics of the room are poor), the frequency characteristics of individual channels can be set closer to flat using the "SYMMETRY" or "ALL CH ADJUST" calibration settings in the amplifier's "Auto MCACC" function. (For details, see page 40 in the amplifier's Operating Instructions.)
- It is usually not possible to calculate the equalization values employed by the amplifier's Advanced EQ Setup function simply by viewing the graphs displayed on your PC. (This is because the automatic adjustments made by Advanced EQ Setup function take account of factors such as equalization band interference and analytical filter characteristics, to achieve the optimum characteristic profile.)
- There may be differences on the reverb characteristics graphs after measurements with the Auto MCACC function ("CUSTOM" → "ALL", "Keep SP System" or "EQ Pro. & S-Wave") as compared to after measurements with the Reverb Measurement function (Manual MCACC → "EQ Professional") due to the standing wave control setting. With Auto MCACC, the reverberations are measured with standing wave controlled, so the reverb characteristics graph does not reflect the influence of the standing waves. By contrast, with Reverb Measurement, the reverberations are measured without standing wave control, so you can check the reverb characteristics including the influence of the standing waves. If you want to check the acoustics of the room (with the standing waves), we recommend using Reverb Measurement.

Continue

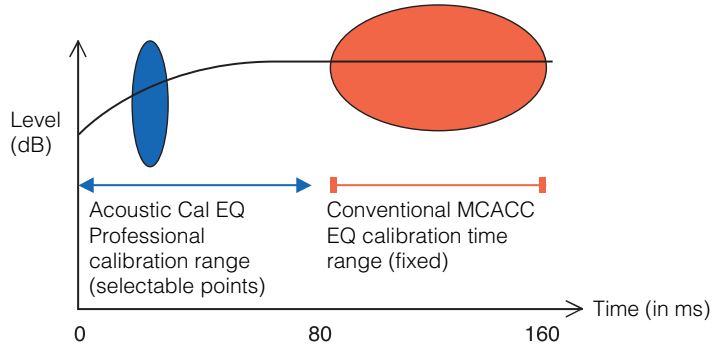
Deciding the time period for Advanced EQ Setup calibration

With conventional MCACC EQ calibration, the microphone input's data acquisition time was fixed at between 80 and 160 [ms] (red part of Figure 1). By contrast, with the amplifier's Advanced EQ Setup function allowing more professional equalization, the customer can select individual points between 0 and 80 [ms] (with a 20 ms width) (blue part of Figure 1).

Note

You can specify the time period setting using the "Advanced EQ Setup" in the "EQ Professional" sub-menu (in the "Manual MCACC" menu). This setting is not required if you're satisfied with the results of the "Auto MCACC" setup (For details, see page 48 in the Operating Instructions).

Figure 1 Comparison of microphone data acquisition time periods

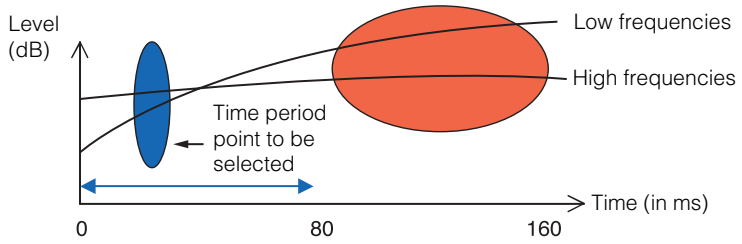


To decide the time period for Advanced EQ Setup calibration, view the graphs of the measured reverb characteristics, and refer to the following three patterns.

Pattern 1: Different reverb characteristics for high and low frequencies

In rooms with reverb characteristics like those shown in Figure 2, lower frequencies often seem overly reverberant compared to higher frequencies (i.e. the room sounds 'boomy'). With conventional MCACC EQ calibration, data between 80 and 160 [ms] (red part of Figure 2) was acquired, so the low frequency volume was deemed high and the high frequency volume deemed low, and the equalization curve was calibrated with the high frequencies somewhat boosted. However, for the characteristics of the sound reaching the ear directly within about 40 ms, there is enough volume that there is no real need to boost the high frequencies, so with equalization using the conventional MCACC EQ calibration the high frequencies sometimes sounded too strong. Therefore, the Acoustic Cal EQ may result in a room where high frequencies sound shrill. **In cases like this, setting the time period for Advanced EQ Setup to 30 to 50 msec (the blue area in Figure 2) to adjust for sounds coming directly from the speakers can flatten the frequency response for direct sounds (including initial reflections) and give a better-balanced sound field.**

Figure 2

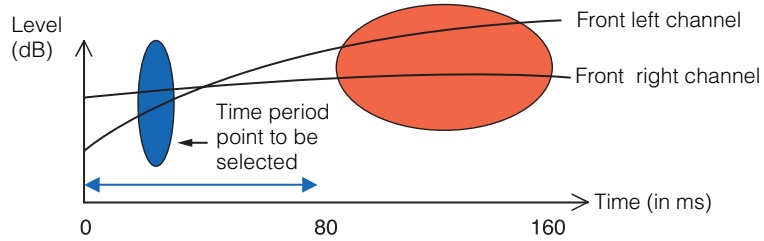


Continue

Pattern 2: Different reverb characteristics for different channels

If the reverb characteristics differ for the different channels as shown in Figure 3, equalization using the conventional Acoustic Cal EQ acquired data between 80 and 160 [ms] (red part of Figure 3), so equalization was performed to gradually equalize the tone of the different channels for 80 ms from the time the sound was emitted from the speakers and after (it was not possible to equalize the response of the direct sound). However, the sense of placement and movement of the acoustic image and the unity of the sound from the different speakers is influenced not by the reverberations but by the direct sound from the speakers (including the early reflected sound). **In cases like this, you should use Advanced EQ Setup and set the time period to 30 to 50 msec (the blue area in Figure 3). This allows the characteristics of direct sounds to be balanced for each channel, giving an ideal sound field with good acoustic positioning and movement.**

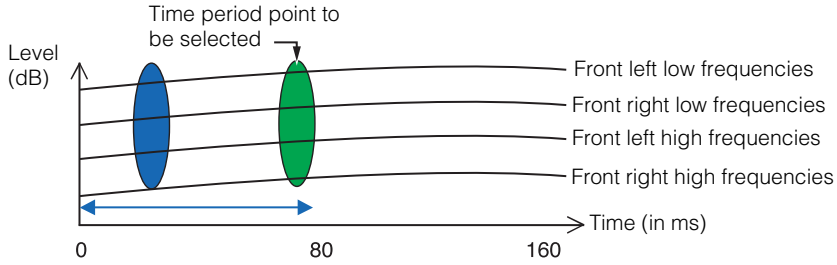
Figure 3



Pattern 3: Similar reverb characteristics for high and low frequencies and all channels

As shown in Figure 4, when the reverb characteristics for all channels are similar across all frequencies, your sound experience will probably not be adversely affected by reverberation. **We recommend calibrating with a time of about 60 to 80 [ms] (green part of Figure 4) specified at Advanced EQ Setup. This produces a total calibration for both direct sounds and reverberations, resulting in an ideal sound field.**

Figure 4



Note

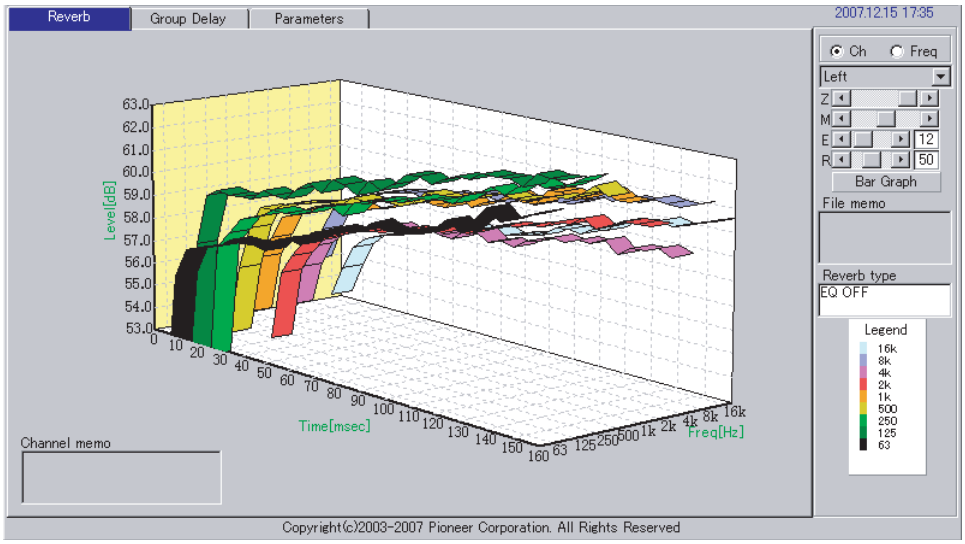
- If you are not sure which time period to specify in Advanced EQ Setup, start by trying 30 to 50 msec. If the graphs show an unusual reverb curve for a specific frequency, the cause may be some accidental variation. Instead of selecting 30 to 50 msec, try another time period.
- Another good method is to try various time periods in Advanced EQ Setup and select the one which sounds the best.
- Time period settings cannot be made on the PC. They can only be made on the on-screen display of the amplifier, using the amplifier's Advanced EQ Setup function.

Continue

Checking steps to improve your room's reverb characteristics

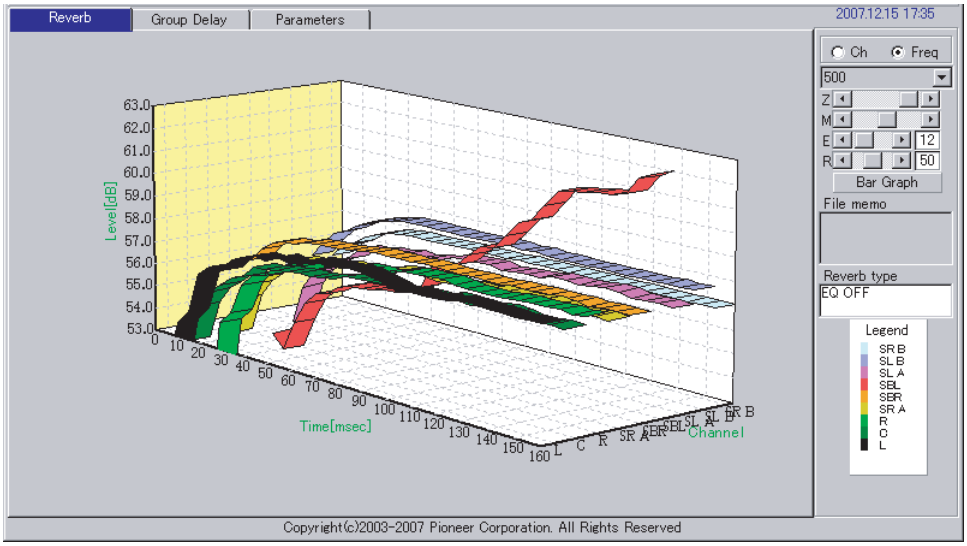
The reverb characteristics of your listening room graphs are evident from the graphs. For your reference, the following four examples explain how different types of rooms appear in the graphs.

Case 1: Graph rises to right across all frequencies



This is probably a room with a good deal of reverberation. If possible, we recommend that you try installing some sound absorbent material to create a deader acoustic space according to your preference.

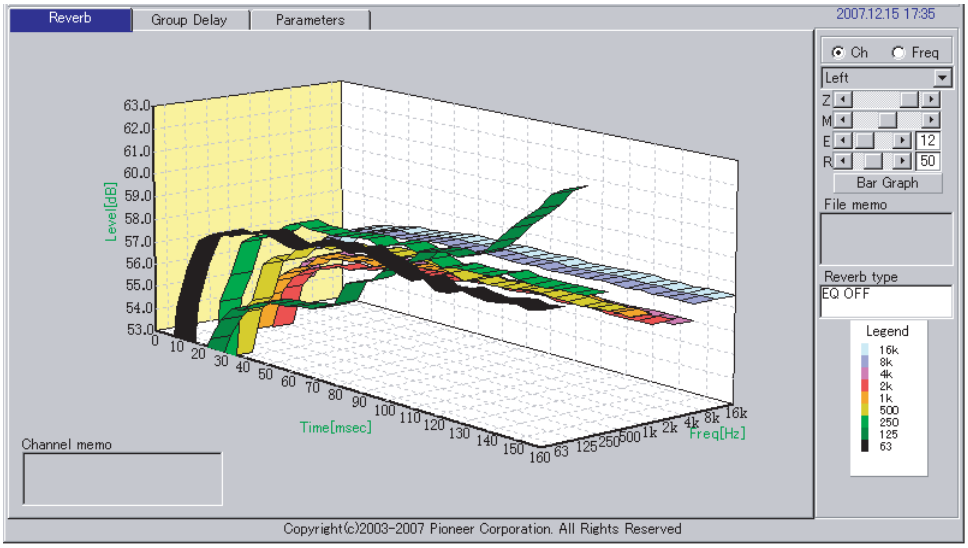
Case 2: Specific channel shows unusual reverb characteristics



There is probably some object near the speaker which affects sound reproduction. If possible, we recommend that you try to reduce the influence of that object.

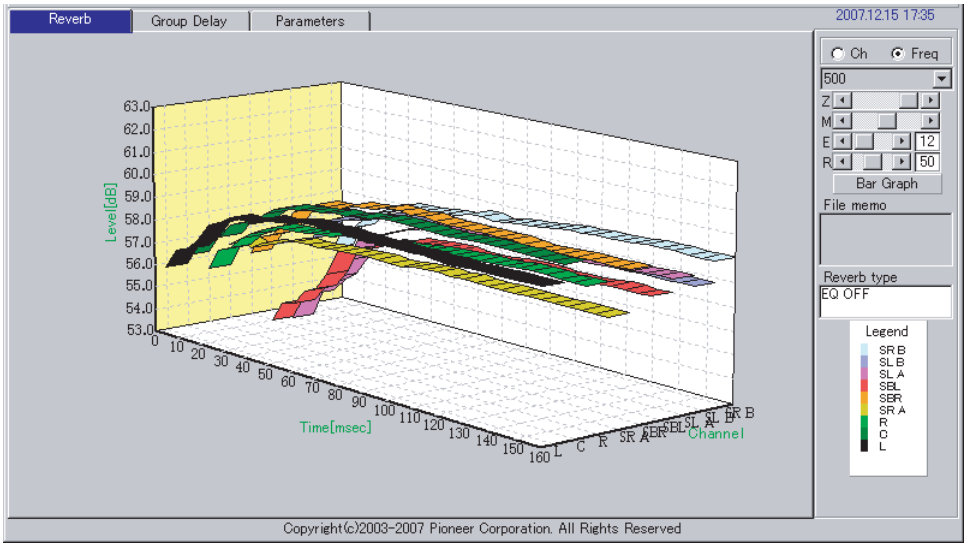
Continue

Case 3: Specific frequency shows unusual reverb characteristics



There is probably something in the room that affects the reproduction of that frequency. If possible, try to find an arrangement that reduces the effect.

Case 4: A specific channel is slow to start



This can happen when a speaker is unstable. If possible, we recommend that you try to stabilize the speaker stand, to bring the characteristics of that channel into line with the other channels.

Note

In all of these cases, when the “Auto MCACC” operation is performed, the calibration time position is selected automatically in consideration of the room’s characteristics so that the optimum sound field can be achieved. (See pages 11 and 40 of the amplifier’s Operating Instructions.)
When measurements are made with the “CUSTOM” mode, automatic calibration taking the reverberations into consideration is only performed when “ALL”, “Keep SP System” or “EQ Pro. & S-Wave” is selected at “Custom Menu”.

Continue

Displaying reverb characteristics after calibration

To display the graph of your listening area's reverb characteristics with the equalization performed by this amplifier (after calibration), you'll need to select the "EQ ON" option from the "Reverb Measurement" menu. Using this graph, you can confirm the effects of MCACC calibration for your listening area.

1 Connect the amplifier to your PC with a RS-232C cable.

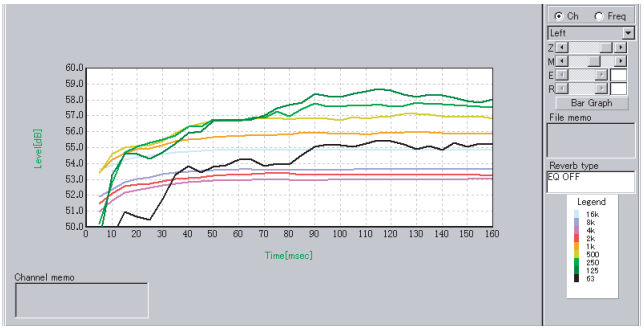
See page 7 for more on connecting the RS-232C cable.

2 Select the "EQ Professional" option for "Manual MCACC", and perform with "Reverb Measurement" set to "EQ OFF". (See page 8 or page 48 of the amplifier's Operating Instructions.)

The reverb characteristics before equalization are measured.
If the "Auto MCACC" operation has never been performed, conduct the "Auto MCACC (ALL)" operation here.
(See page 11 of the amplifier's Operating Instructions.)

3 Receive and save the data by selecting "Output PC" from "Data Management".

When you receive and save this information on your PC, you will be able to see the graph of your listening area's reverb characteristics before calibration.



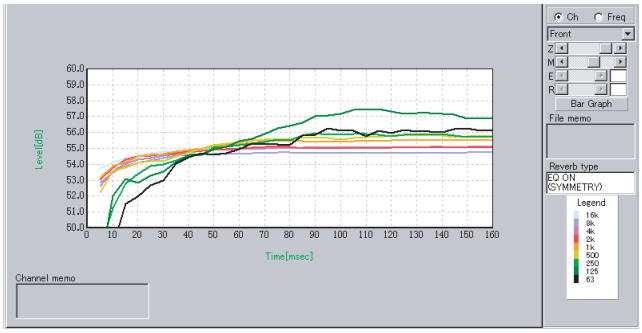
4 Select "Reverb Measurement" from the amplifier's "EQ Professional" menu and choose the "EQ ON". (See page 8 or page 48 of the amplifier's Operating Instructions.)

Measure the room's reverb characteristics after equalization with the microphone at the same position as when the "Auto MCACC (ALL)" operation was performed. The measurements are performed with the EQ values stored in the MCACC memory selected on the amplifier, so before measuring the reverb characteristics, select the MCACC memory to be measured after equalization.

Continue

5 Receive and save the data by selecting “Output PC” from “Data Management”.

When you receive and save this information on your PC, you will be able to see the graph of your listening area’s reverb characteristics with the equalization performed by this amplifier (after calibration). The following graph shows the reverb measurement results after Advanced EQ Setup calibration (with a time period setting of 30-50ms):



About the types of displays of the graph for the reverb characteristics after EQ calibration

For “SYMMETRY” or “FRONT ALIGN”

- The display type is set to “Pair Ch” (page 13). For reasons of the properties of the different EQ curves, when the “Each Ch” display type is set, the reverb characteristics for the different channels do not line up properly.
- The reverb characteristics prior to calibration are displayed in the “Each Ch” mode, so if you want to compare the characteristics before and after calibration, set the display type prior to calibration to “Pair Ch”. This way the number of channels before and after calibration are the same, allowing you to compare.

For “ALL CH ADJUST”

- The display type is set to “Each Ch” (page 13). For reasons of the properties of the EQ curves, when the “Pair Ch” display type is set, the reverb characteristics for the different pairs of channels do not line up properly.
- Since the “Each Ch” display type is set both before and after calibration, the graphs can be compared as such.

Note

- “Reverb Measurement” calibration data will be lost if the power is switched off.
- The graphs displaying reverb measurements both before and after calibration are displayed in 2-D for comparison purposes.

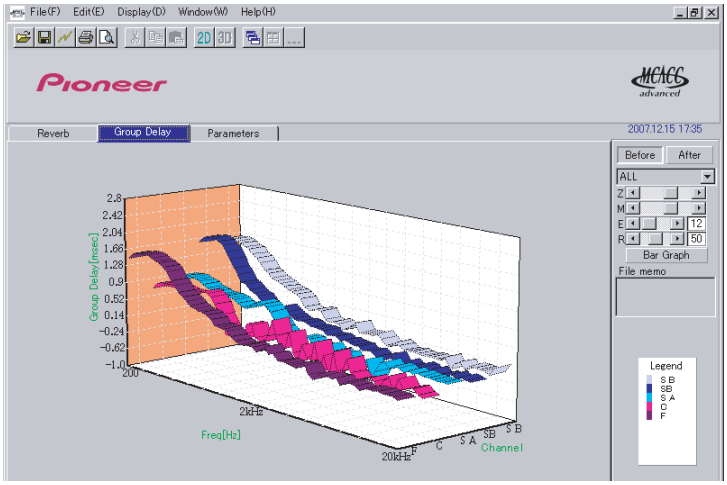
Continue

Reading the group delay characteristics graph (Group Delay)

Group delay characteristics graphs for before and after calibration can be displayed. By comparing the two, it is possible to check in detail the group delay characteristics of the speakers being used and the effect of calibration using the Full Band Phase Control function.

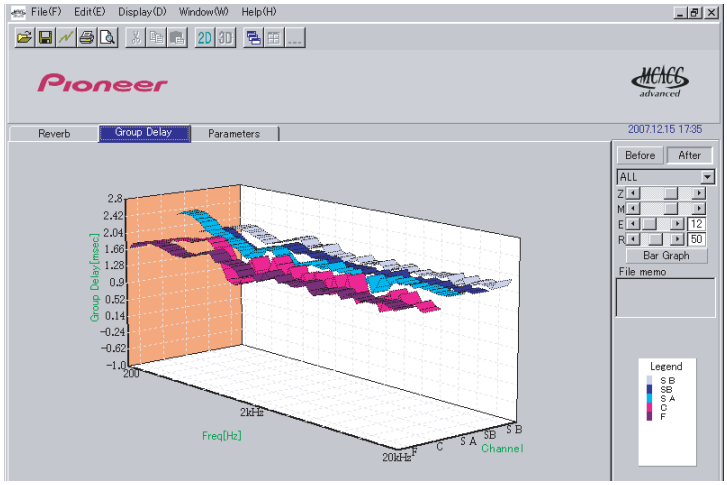
Group delay characteristics graph for before calibration

This graph lets you check that the low frequency band is delayed with respect to the high frequency band (that a group delay is occurring) for the different channels.



Group delay characteristics graph for after calibration

This graphs shows you that the delay time difference between bands has been reduced and that the group delay has been calibrated for the different channels.



Note

Depending on the speakers being used, the listening environment, etc., the group delay characteristics graphs may be displayed with sharp angles. With actual calibration, however, so as not to tarnish the natural sound, compensation is not performed for characteristics that rise and fall at extremely sharp angles and but instead with priority on group delay characteristics between the different speakers, so there is no adverse effect on the sound quality.

Display of the MCACC parameters

In addition to the reverberation frequency characteristics and group delay characteristics data measured with the Advanced MCACC function, all the parameters (results of measurements) set in the MCACC memories can be checked on the computer.

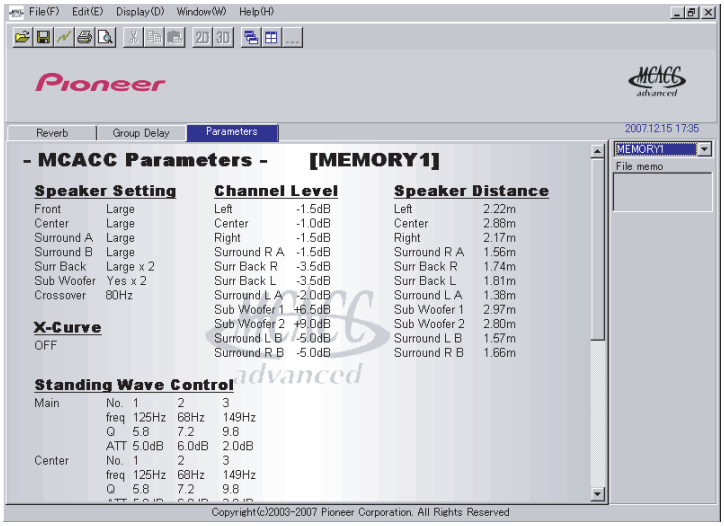
Parameters that can be displayed

1. Speaker Setting (Speaker system and crossover frequency)
2. Channel Level (Speaker output level)
3. Speaker Distance (Distance to the speaker)
4. Standing Wave Control (Standing wave control filter)
5. Acoustic Cal EQ (Calibration of the listening environment's frequency characteristics)[a]
6. X-Curve (Tonal balance of the speaker system for movie soundtracks)

a. In addition to the EQ calibration values stored in each MCACC memory, the EQ calibration curve name ("Symmetry", "All Ch Adjust" or "Front Align") is also displayed. Furthermore, "Custom" is displayed for memories for which the equalizer has been adjusted manually. Measurements of the reverb characteristics after calibration (page 23) are performed applying the EQ calibration curves for these memories.

Displays of the different memories

It is possible to receive and display the data for all the MCACC memories (MEMORY1 to MEMORY6), but also possible to display the data for the individual memories.



Note

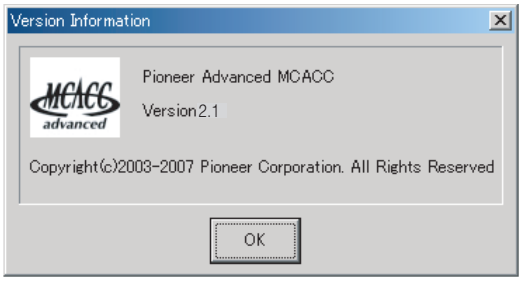
When there are items that cannot fit on the display, move the scroll bar on the screen to display the remaining data.

Updating the application

A new installer is made available on the download site whenever the Advanced MCACC application is updated. You can download the new installer and use it to overwrite (update) the application on your PC.

Note

To check the version of your application, choose “Help” → “Version Info” from the menu bar. A window showing the version (Version 2.1, etc.) appears.

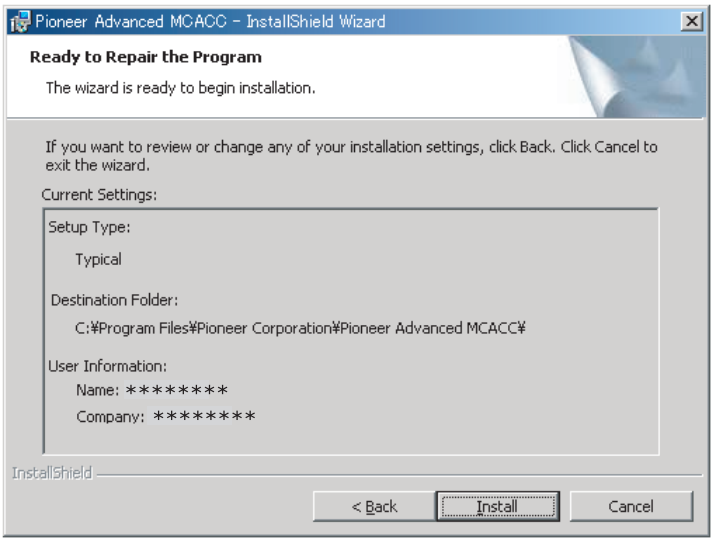


1 Double click the new downloaded installer .

The InstallShield Wizard appears. Perform steps 2 to 5 of *Installing the Application* (page 4).

2 Select “Install”.

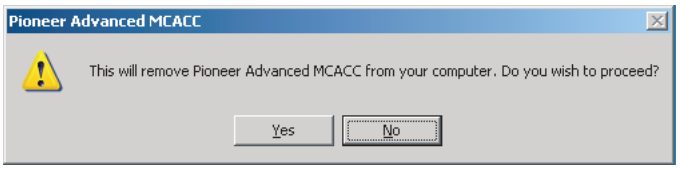
Proceed to step 3 if “Ver. 1.1” or “Ver. 1.4” of the application is installed on your computer, to step 5 if “Ver. 2.0” or later is installed.



Continue

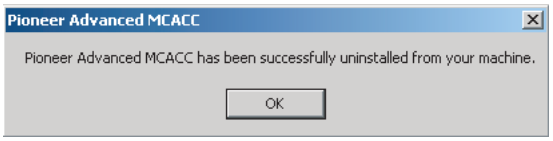
3 Select "Yes".

The previously installed application is deleted.

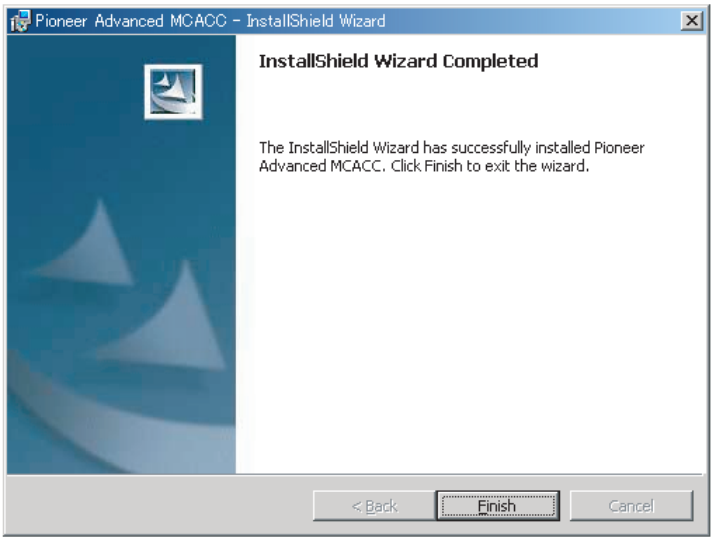


4 Select "OK".

Installation of the latest version begins.



5 Click "Finish".


Pioneer Advanced MCACC - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed Pioneer Advanced MCACC. Click Finish to exit the wizard.
< Back
Finish
Cancel

This completes the updating of the application.

Note

The application may not operate properly if two versions of it are installed on the same computer. If you wish to return to a previous version of the application, uninstall (delete) the currently installed version first, then reinstall the previous version.

Continue

Deleting the application

You can use either of the following methods to uninstall (delete) the application from your PC.

Method 1: Delete from the Control Panel of the PC

From the Start menu, click “Setting” → “Control Panel” → “Add/Remove Programs”.

Method 2: Use the installer file for the currently installed version to delete the application

Note

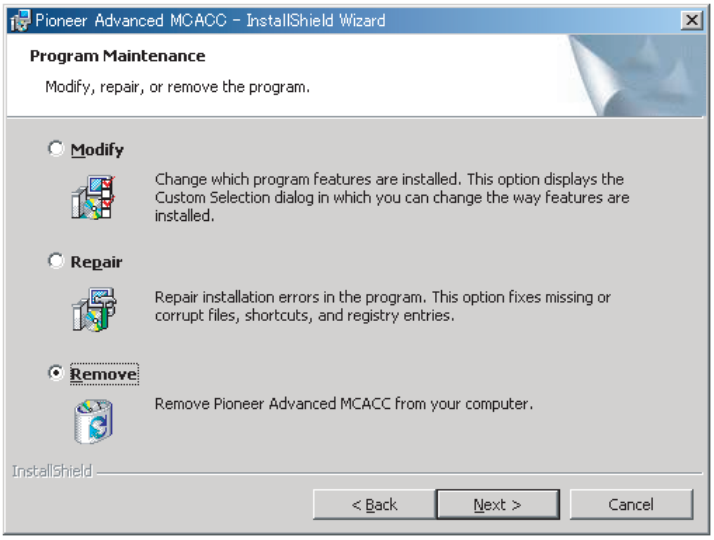
The application cannot be deleted by launching the installer file of a version different from the installed version. To do so, launch the installer file for the same version.

1 **Double click the “PioneerAdvancedMCACC_e_ver_*_*.exe” file .**

The InstallShield Wizard appears.

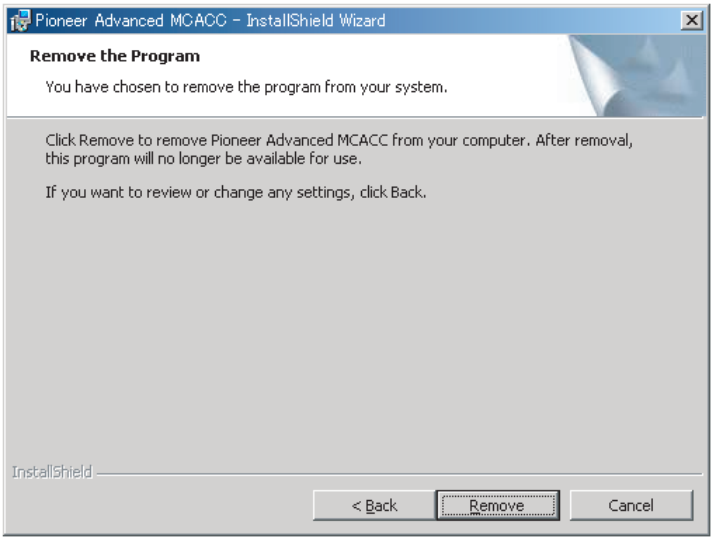
2 **Select “Next”.**

3 **Select “Remove”, then select “Next”.**

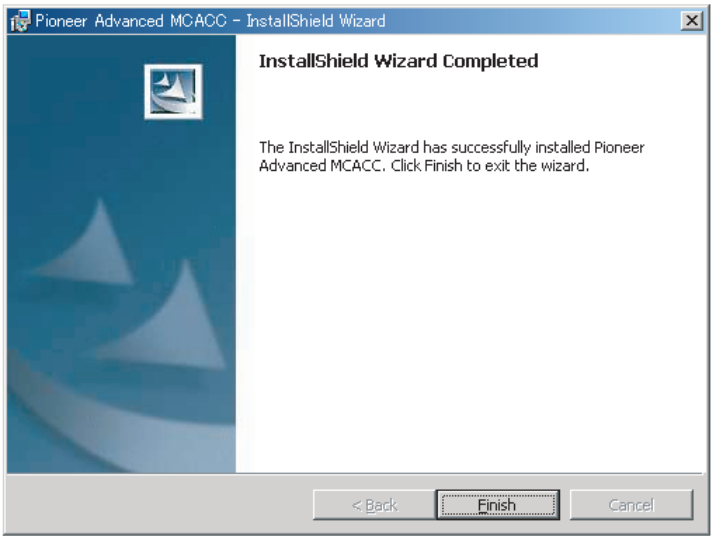

Pioneer Advanced MCACC - InstallShield Wizard
Program Maintenance
Modify, repair, or remove the program.
Modify
Change which program features are installed. This option displays the Custom Selection dialog in which you can change the way features are installed.
Repair
Repair installation errors in the program. This option fixes missing or corrupt files, shortcuts, and registry entries.
Remove
Remove Pioneer Advanced MCACC from your computer.
InstallShield
< Back
Next >
Cancel

Continue

4 Select “Remove”.


Pioneer Advanced MCACC - InstallShield Wizard
Remove the Program
You have chosen to remove the program from your system.
Click Remove to remove Pioneer Advanced MCACC from your computer. After removal, this program will no longer be available for use.
If you want to review or change any settings, click Back.
InstallShield
< Back
Remove
Cancel

5 Click “Finish”.


Pioneer Advanced MCACC - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed Pioneer Advanced MCACC. Click Finish to exit the wizard.
< Back
Finish
Cancel

This completes the deletion of the application.

Continue

Repairing the application

The repair function can be used for example if desktop shortcuts have been deleted, etc., to restore the application to the same conditions as when it was first installed.

Note

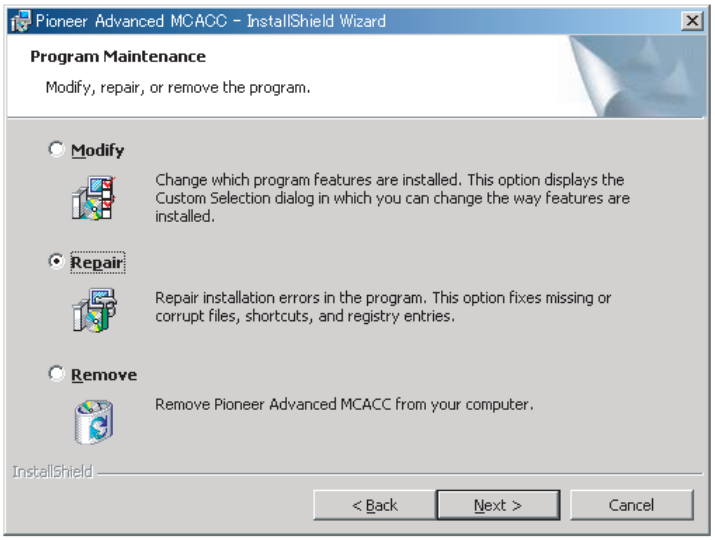
The application cannot be repaired by launching the installer file of a version different from the installed version. To do so, launch the installer file for the same version.

1 Double-click the installer file for the currently installed version.

The InstallShield Wizard appears.

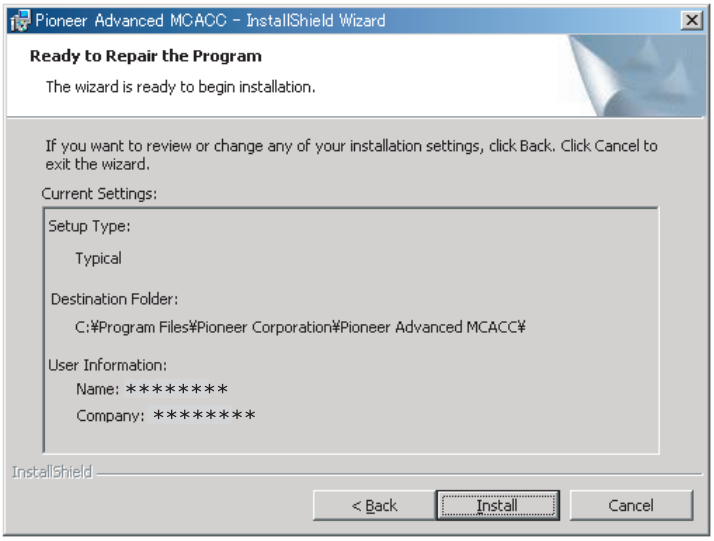
2 Select “Next”.

3 Select “Repair”, then select “Next”.

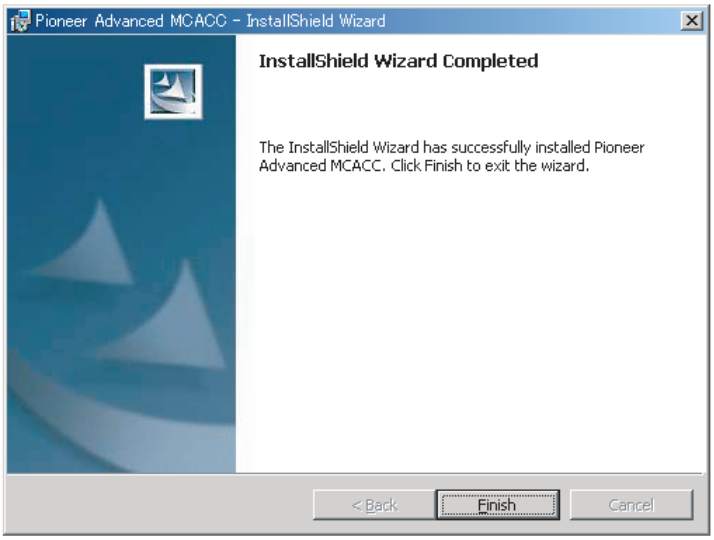

Pioneer Advanced MCACC - InstallShield Wizard
Program Maintenance
Modify, repair, or remove the program.
Modify
Change which program features are installed. This option displays the Custom Selection dialog in which you can change the way features are installed.
Repair
Repair installation errors in the program. This option fixes missing or corrupt files, shortcuts, and registry entries.
Remove
Remove Pioneer Advanced MCACC from your computer.
InstallShield
< Back
Next >
Cancel

Continue

4 Select “Install”.



5 Click “Finish”.


Pioneer Advanced MCACC - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed Pioneer Advanced MCACC. Click Finish to exit the wizard.
< Back
Finish
Cancel

This completes the repairing of the application.

Modifying the application

With the application for the SC-LX90, “Modify” cannot be used.

Troubleshooting

As you use the Advanced MCACC application, errors can occur for a variety of reasons, such as incompatibilities with other applications and the current configuration of your PC. If an error occurs, refer to the troubleshooting points below.
If the trouble cannot be rectified even after checking the points listed below, ask the Pioneer Service Center specified on your warranty card.

The application is unstable, or does not work normally

Cause 1:

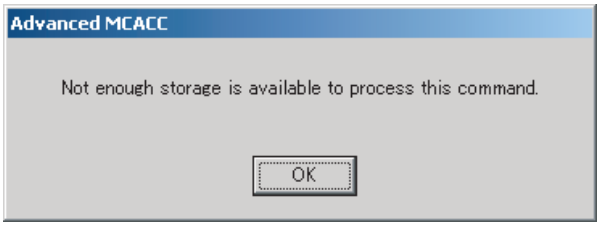
If your PC does not meet the requirements for using this application, the application can be unstable, very slow, or freeze up.

Check to be sure that your PC meets the requirements for using this application. (See page 2.) You cannot use this application unless your PC meets all of the requirements.

Cause 2:

Even if the required conditions for the computer environment are met, if many files are opened in the application and all are displayed with the MCACC Para option, an error message may appear due to lack of computer memory.

If the error below should occur, either close some of the opened files, or quit the application itself then restart it. If you want to compare many files, we recommend printing them out using the Print function and comparing them on paper.



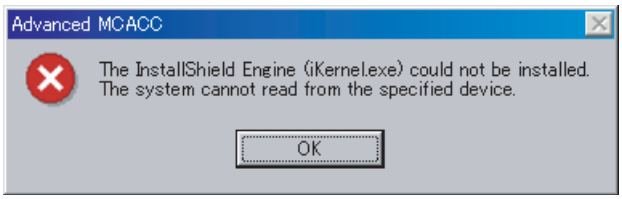
Continue

Advanced MCACC cannot be installed

Cause 1:

An error message may appear if there are not enough system resources available.

If an error message like the one shown below appears, re-start the PC, then start the installer (PioneerAdvancedMCACC_e_ver_*_*.exe) with no other applications active.


Advanced MCACC
The InstallShield Engine (iKernel.exe) could not be installed.
The system cannot read from the specified device.
OK

Cause 2:

Installation of Advanced MCACC may fail because of incompatibilities with other applications.

Try the following, in the order indicated.

1) If there are any other applications active, exit the other applications and try starting the installer (PioneerAdvancedMCACC_e_ver_*_*.exe) again.
2) If that does not work, try restarting your PC, and starting the installer (PioneerAdvancedMCACC_e_ver_*_*.exe) with no other applications active.

Cannot send measurement data to PC

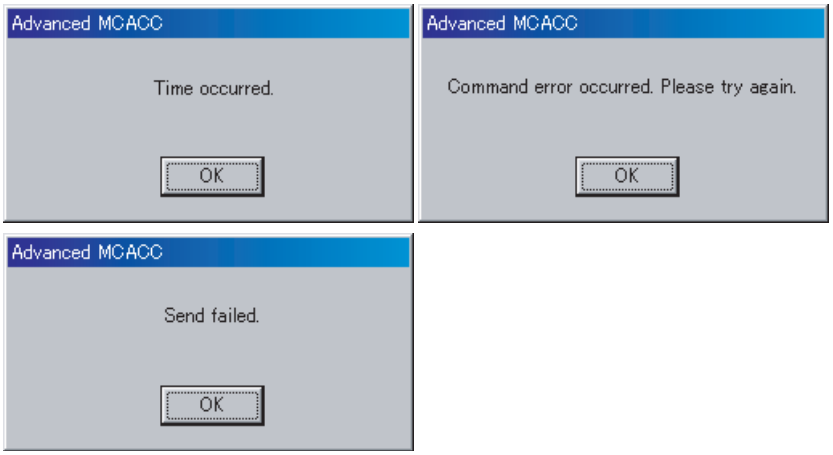
Cause 1:

Random transmission errors sometimes occur.

Even if an error occurred on your first attempt, try sending the data again. Sometimes the transmission succeeds when you try again.

Cause 2:

Messages like the following may appear if a transmission error occurs.



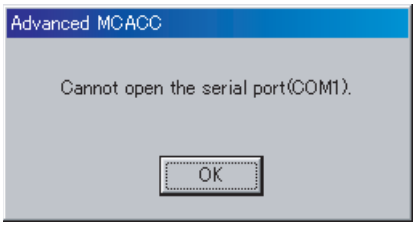
Continue

Try the following, in the order indicated.

1) In the setup screen of the amplifier, check that “Start the MCACC application on your PC” is displayed. (This message indicates that the amplifier is ready to send data to the PC.)
2) Check that the RS-232C cable is properly connected. (Be sure to switch off all components and disconnect their power cord from the power outlets before changing any cable connections.)
3) Exit any other active applications.
4) Check the COM port number.
5) Check the type of RS-232C cable to use is correct (page 7).
6) Restart the Advanced MCACC application.
7) Restart your PC.

Cause 3:

The following message may appear and the data transmission may be not available.



Refer to the operation manual for PC or the application software using the COM port, and make the connecting COM port available for transmission.

Advanced MCACC cannot be updated

Cause 1:

An error message may appear if there are not enough system resources available.

If an error message appears (like the one explained above in Cause 1) of *Advanced MCACC cannot be installed* (page 34), restart your PC and start the installer (PioneerAdvancedMCACC_e_ver_*_*.exe) with no other applications active.

Cause 2:

Updating of Advanced MCACC may fail because of incompatibilities with other applications.

Try the following, in the order indicated.

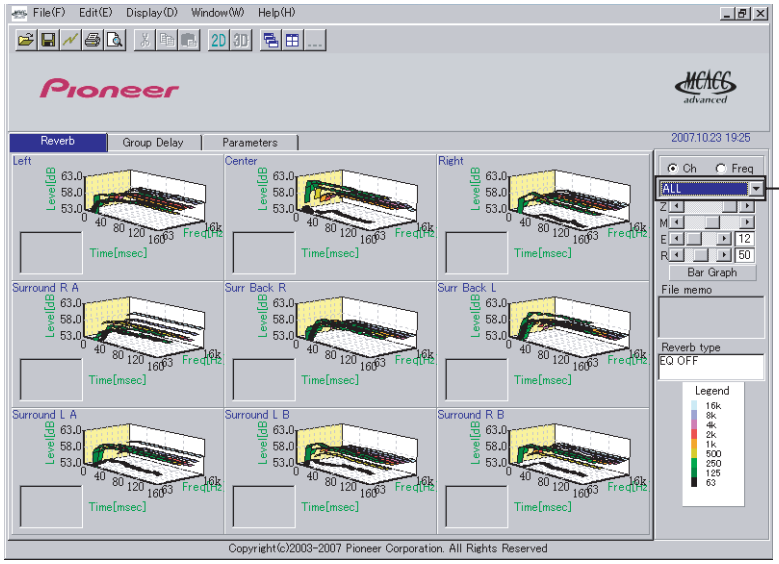
1) If there are any other applications active, exit the other applications and try starting the installer (PioneerAdvancedMCACC_e_ver_*_*.exe) again.
2) If that does not work, try restarting your PC, and starting the installer (PioneerAdvancedMCACC_e_ver_*_*.exe) with no other applications active.

Continue

Reverb characteristics graph cannot be printed

Cause:

It is not possible to print reverb characteristics graphs displayed in the "ALL" mode.



ALL display

Print after selecting an individual channel or frequency graph.

Some functions in application operation cannot be used

Cause:

You may not properly use the application software not corresponding to your amplifier.

Check the model number of your amplifier and use the application software corresponding to it.

The amplifier causes a malfunction when it is connected to the PC with a RS-232C cable

Cause:

When the amplifier is connected to your PC with a RS-232C cable, the power of the amplifier may be automatically switched on when you operate the PC.

Unplug the cable when not in use.

Continue

EQ response in the graph (following calibration) does not appear flat

Cause 1:

The slope of the graph indicates the reverb characteristics. The reverb characteristics of the room itself cannot be corrected by equalization alone, so the angle of the graphs' slope is the same before and after calibration.

Through calibration, the graphs for the different frequencies move horizontally by the amount of the equalization. For the results of calibration, you can check that the graphs line up at a specific point on the time axis.

The reverb characteristics themselves (the shape of the graph) do not change unless the listening environment is improved.

(See pages 18 to 20.)

Cause 2:

For various reasons, the frequency characteristic graphs may not become flat even when equalization is performed with the "SYMMETRY" or "ALL CH ADJUST" functions.

With MCACC, calibration is performed automatically to achieve the optimum sound quality, but without any unreasonable calibration.

Adjustments made with the "Manual MCACC" setup do not change the graph

Cause:

Despite level adjustments being made, the filters used for analysis may not display these adjustments in the graphical output.

However, these adjustments are taken this into account by the filters dedicated to overall system calibration.

Lower frequencies do not seem to have been calibrated for SMALL speakers

Cause 1:

Low frequency calibration with the equalizer is not performed for speakers that are set to "SMALL", but the reverb characteristics display shows the pure characteristics of the sound output from the speakers, so it indicates the characteristics with no low frequency calibration.

With MCACC, optimum calibration is performed in function of the speakers' sound reproduction capacities, so there is no problem for low frequency calibration of speakers that are set to "SMALL".

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